1. Introduction:

On May 1, 2000, the Weather Forecast Office at Pocatello Idaho formally assumed Fire Weather forecast responsibility for portions of Idaho serviced by the Central, Eastern and Southern Idaho Dispatch Centers, including the Sawtooth NF from the forecast office at Boise. This is the third Annual Fire Weather Report by the Pocatello Fire Weather Office. For annual summary information from years prior to 2000, please refer to the Boise Fire Weather Annual Reports.

2. Overview of the fire season:

The operable word to describe the 2002 fire season was more drought. Precipitation across Southeast Idaho was much below normal for the third year in a row and nationally, drought affected nearly half of the lower 48 states (Figure 3.5c). Most of the higher elevations got off to a good start in November and December, 2001. A half dozen storm systems quickly raised basin averaged precipitation and snow pack to 110 to 120 percent of normal but this was short lived (Figures 3.1a and b). Winter precipitation temporarily helped mitigate ongoing drought conditions but, the remainder of the season saw below normal precipitation in all basins across the district. The driest conditions were in the Bear River Basin where snow pack was only 65 to 75 percent of normal. A June snow event also provided short relief from drought in the Caribou National Forest. By mid summer, the Palmer drought index indicated severe drought in central Idaho with conditions spreading to the rest of the district (Figure 3.5a and b). The effects of continued drought was also evident in area reservoirs (Figure 3.1c). The USDA National Resources Conservation Service reported the area water supply would not be enough to meet irrigation demands (not shown).

Persistent drought conditions may in part be due to an extended El Nino (La Nina) cycle that began during the summer of 1998. The El Nino/Southern Oscillation (ENSO) cycle occurs over a 2-7 year period and refers to conditions of sea surface temperatures in the tropical Pacific Ocean. Researchers have identified other cyclic patterns besides ENSO around the globe that may affect long-term weather patterns. Some of these cyclic patterns may span 10 or even 30 years. La Nina (colder than normal) and El Nino (warmer than normal) are terms associated with extremes in the ENSO cycle. Most recently, La Nina conditions began during the summer of 1998 and continued strong through the spring of 2001, remained neutral through May of 2002, and slowly shifted to a weak El Nino (warm) episode through the remainder of 2002. While the combined effects of these cyclic circulation patterns, volcanoes and other man made or natural phenomena are quite complex, some pattern changes in the weather have been associated with the ENSO cycle.

Two patterns associated with La Nina for this area include a prevailing westerly jet stream and high pressure in the vicinity of the Pacific northwest coast that results in cooler and drier northwest winds aloft over Southeast Idaho. The former was observed frequently during the spring of 2002 with most storm systems moving into Idaho from the eastern Pacific Ocean with moderated temperatures and reduced moisture.

This was followed by a three to four week period in July when high pressure developed near the "four corners region" (intersection of Nevada, Utah, Arizona and New Mexico). However prevailing westerlies continued to dominate Idaho and forced the normal summertime flow of monsoon moisture moving north from Arizona, to shift further east through Utah and Wyoming. This contributed to a season with very few thunderstorms which likely resulted in fewer lightning caused fire starts.

The Weather Forecast Office in Pocatello, Idaho reported below normal precipitation for 23 of the past 25 months. The accumulative precipitation deficit over the past 25 months is 10.39 inches. Total precipitation between January 1, and November 30, 2002 was 11.48 inches or 4.60 inches below normal. The lowest annual precipitation recorded was 5.34 inches in 1966. Weather records began in Pocatello, Idaho in July, 1899.

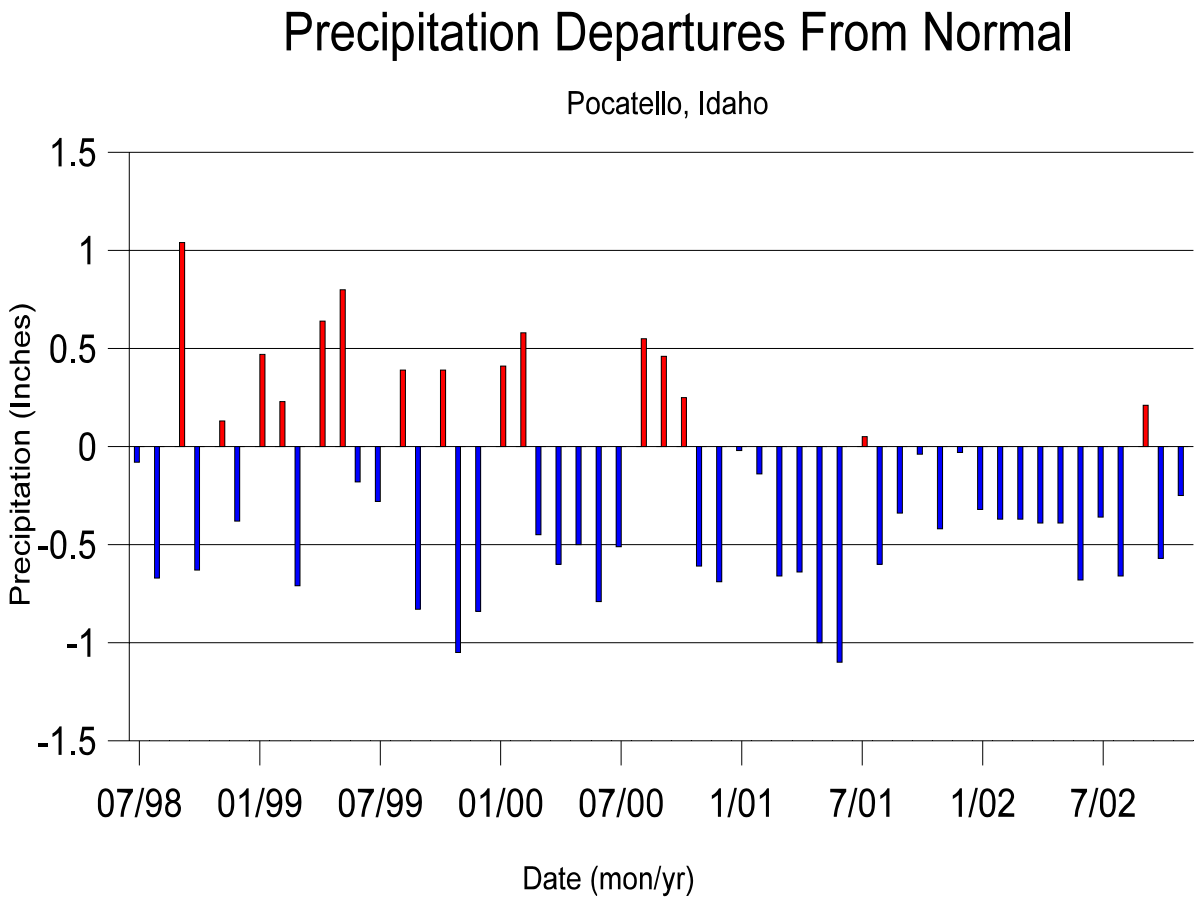
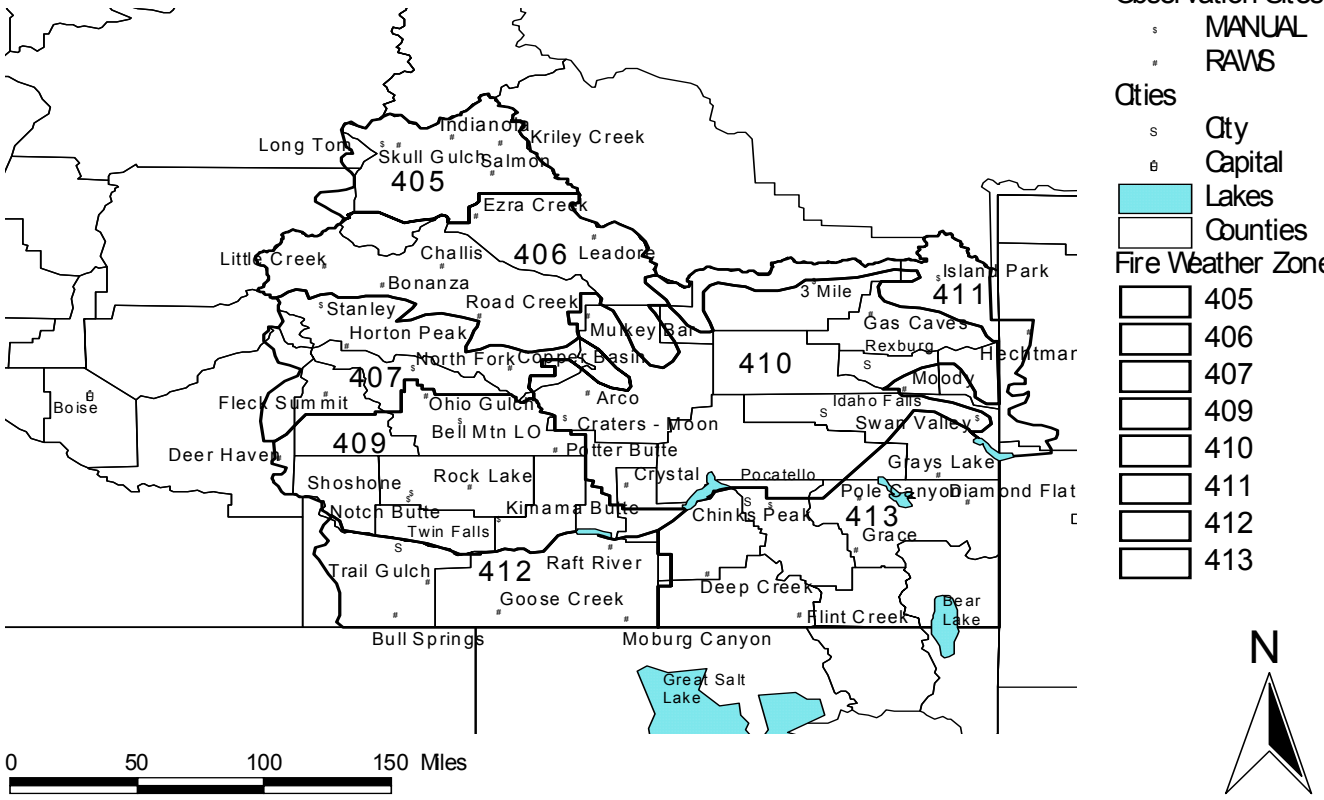


Figure 1.1. Precipitation departures from normal at Pocatello, Idaho.

SE Idaho Fire Weather Zones and Observations Sites



		Wildfires		Prescribed Fires		Wildland Fire Use	
		Fires	Acres	Fires	Acres	Fires	Acres
USFS							
	Caribou-Targhee National Forest	42	63	5	841	2	0
	Salmon-Challis National Forest	110	7,343	3	1,970	9	1,999
	Sawtooth National Forest	52	2,526	40	2,059	0	0
BLM							
	Upper Snake River Dist.						
	Eastern Idaho	40	1,161	1	40	0	0
	South-Central	53	13,533	6	10,920	0	0
	Salmon/Clearwater Dist.	11	52	3	750	0	0
FWS							
	Bear Lake	0	0	0	0	0	0
	Gray's Lake	0	0	2	30	0	0
	Minidoka	0	0	1	755	0	0
NPS	Craters of The Moon National Monument	1	1	0	0	0	0
	City of Rocks	0	0	0	0	0	0
BIA	Fort Hall Agency	2	0	0	0	0	0
INEEL		1	125	0	0	0	0
Total		312	24,804	61	17,365	11	1,999

Table 1. Preliminary (November 7, 2002) estimate of fires and acres burned in Southeast Idaho during the 2002 fire season. Source Bureau of Land Management, Eastern Great Basin Coordination Center.

3. Weather in review:

October and November 2001:
Warmer and drier than normal conditions characterized most of this period as the storm track pushed Pacific storms into British Columbia, then southeastward only once they had passed the continental divide. This kept southeast Idaho in northwesterly air flow which favored the Salmon, Wood, Lost, and Upper Snake River basins with slightly above normal precipitation for October. The drainage basins south of the Snake River and the Bear River basin received less than 70% of normal precipitation, with Pocatello receiving only 54% of normal. The storm track shifted somewhat for November, favoring the "south side" and Bear River basins with near normal precipitation. Precipitation for the other basins was below normal. The only major storm occurred in the days prior to Thanksgiving Day, the first winter storm of the season.

December 2001:
The first half of this month had an active weather pattern over the Gem state, with two large storms in the first 7 days. Pocatello received 7 inches of snow during the first week of December. More storms occurred on the 10th/11th , the 14th, and the 17th. Basin precipitation for all southeastern Idaho basins was above normal, with basins to the south of the Snake River receiving the most at 145% of normal. For the last half of the month, the storm track was to the south of the state. This left Idaho on the cold air side of most of these later storms, and pushed the December average temperatures much colder than normal; Pocatello had an average temperature more than 4 degrees below normal for the last two weeks of the month.

January 2002:
Dry and cold conditions continued for the region until halfway through the month as high pressure became nearly stationary over the western states for the first two weeks. Stormy weather on the 15th, 17th/18th , 21st-23rd , and then a major storm on the 27th/28th . Precipitation was below normal for all areas, although the Salmon River basin did the best with 92% of normal. The Bear River basin was the driest with 63% of normal. Snow pack measurements began this month, with only the basins south of the Snake River keeping above average snowpack. The Salmon River basin was average. The remaining basins were below average in terms of snow pack.

February 2002:
This month was nearly a repeat of the previous February; high pressure over the western states kept storms away from Idaho for the most part until the last day of the month. The Salmon River basin did the best with 55% of normal precipitation while all other basins received precipitation amounts in the 40% to 50% range. Pocatello received only 23% of what it usually gets for the month. The dry spell sent snowpack levels below normal for all locations, with the Bear River basin well below normal. It could have been worse, as February temperatures were much colder than normal – Pocatello's average temperature was more than 11 degrees below February norms.

March 2002:
Only three significant storms crossed southeast Idaho, but it was enough to keep precipitation fairly close to normal with the Bear River basin the driest at 75%. The first storm on the 6th/7th was very warm for the time of year (Pocatello reached 50 degrees on the afternoon of the 6th), not helping the snow pack at all. Another big storm struck on the 12th/13th, and a more moderate

storm on the 16th/17th. Only the basins south of the Snake River approached normal snowpack, with all others continuing below normal and even well below normal for the Bear River basin. Temperatures continued the colder than normal trend that started in December, although not as striking as the cold of February.

April 2002:
April reversed the trends of the winter months with near normal temperatures and precipitation for the month. Again, the Bear River basin had the driest month with 87% of normal precipitation falling. The precipitation was mainly generated by one large storm that struck on April 14th – 16th. Eight inches of snow were reported at the Pocatello Regional Airport during the "Tax Day" storm; the high on the 14th was 78 degrees, while the high on the 15th was 48 degrees.

May and June 2002:
May was a windy month this year, with the prevailing pattern for most of the month being westerly or "zonal" airflow. Precipitation was below normal (Pocatello Regional Airport only measured 75% of normal). With the number of dry cold fronts that moved through southeast Idaho, temperatures were near normal again. All the rainfall at the Pocatello airport fell in one event, a low that moved along the Idaho/Nevada-Utah border on the 20th/21st.

June was very similar, with three dry cold fronts moving through as well as two large areas of low pressure. On the 8th–10th, a cold low from interior Canada slid southward slowly over Idaho, bringing measurable snow to the mountains south and east of the Snake River. In spite of receiving measurable snow, June was warmer than normal and drier than normal. Pocatello only received 25% of normal precipitation.

July 2002:
A large areas of high pressure over the United States dominated the weather pattern. On the 6th, 15th–20th, and the 26th/27th, the high was centered over the central U.S. This allowed moist unstable air to enter the intermountain west, triggering showers and thunderstorms on both occasions, with the largest lightning outbreak for southeast Idaho occurring on the 15th. The high slid directly over the state on the 9th–14th, creating the biggest heatwave for the season. In Pocatello, the temperature reached the 100-degree mark four days in a row, setting three records in the stretch. The average temperature for the month was also significantly warmer than normal. In spite of the thunderstorm activity, the drought continued. Pocatello received only 49% of normal rainfall.

August 2002:
High pressure over the western U.S. took an unusually long break from the Pacific northwest during the month, replaced by weak low pressure, especially during the last half of the month. The low did allow for a moderately unstable atmosphere on most days of the month, once again triggering thunderstorms. However, the low pressure was cut off from any moisture source; the Pocatello Regional Airport received zero precipitation for the month. The main focus for thunderstorm activity was in the central Idaho mountains, the area of strongest atmospheric convergence, moisture, and instability during this time.

September 2002:

The closest thing to a "season-ending event" occurred with significant precipitation on the 5th–8th. A Pacific low very slowly meandered through the Pacific northwest. But most of the month was characterized more by a persistent low west of Hudson's Bay in Canada maintaining a northwesterly flow over Idaho. This consistently brought cool air from interior Canada, especially during the last half of the month. The colder temperatures prevented low humidities for much of the month. Precipitation recovered from the extremely dry mid-summer with Pocatello receiving 83% of normal rainfall for this month. For the year ending September 30th, 2002, the Pocatello Airport measured 7.90 inches liquid water equivalent of precipitation, only 63% of normal (12.58 inches).

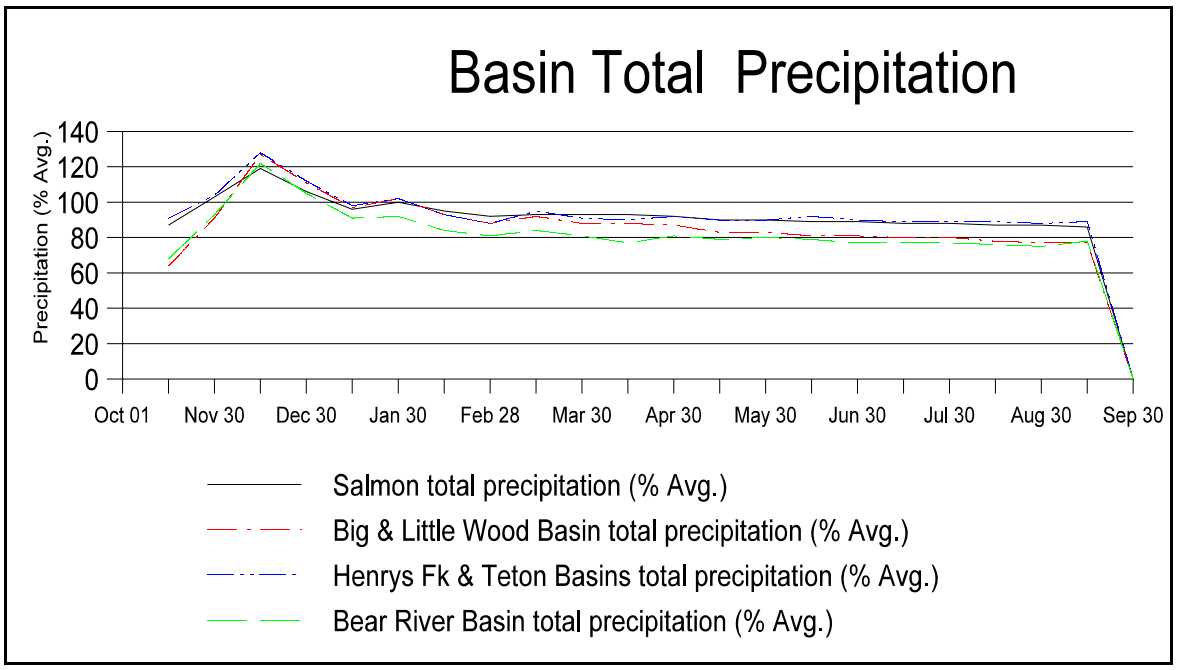


Figure 3.1(a). Total precipitation for select Southeast Idaho Basins expressed as a percent of average. Source USDA Natural Resources Conservation Service, National Water and Climate Center, Portland Oregon.

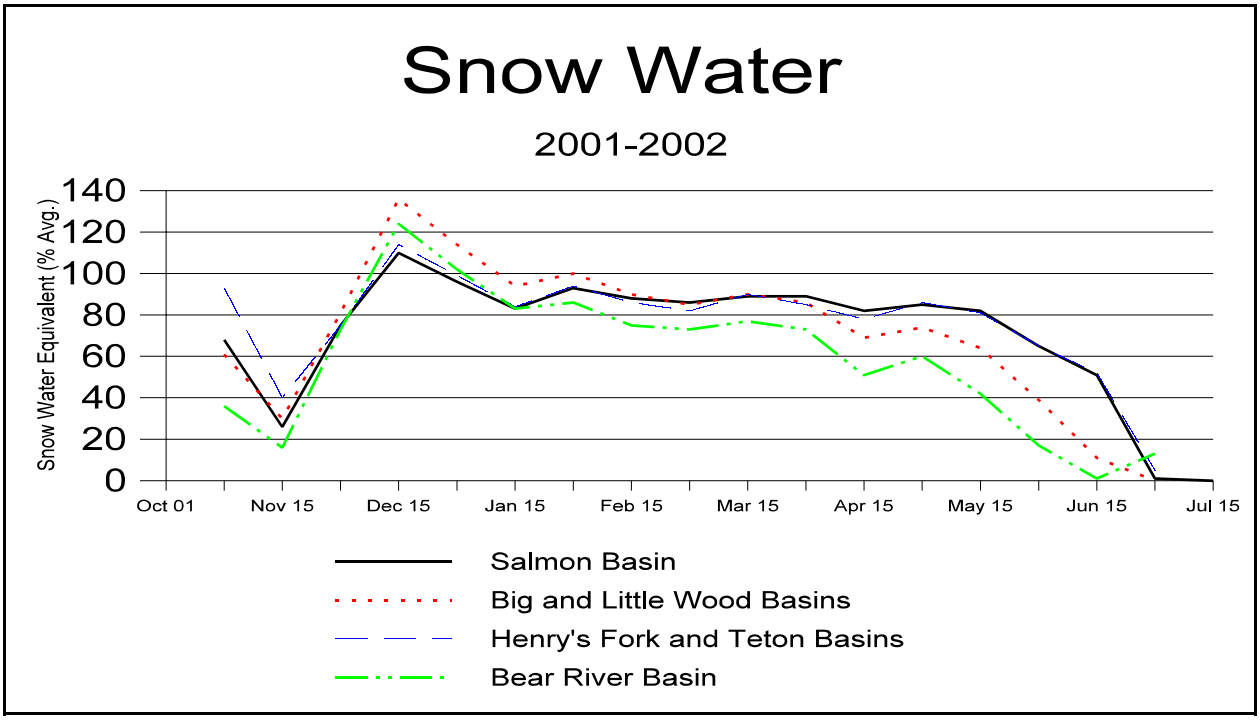


Figure 3.1(b). Snow Water Equivalent for select Southeast Idaho basins. Source USDA Natural Resources Conservation Service, National Water and Climate Center, Portland Oregon.

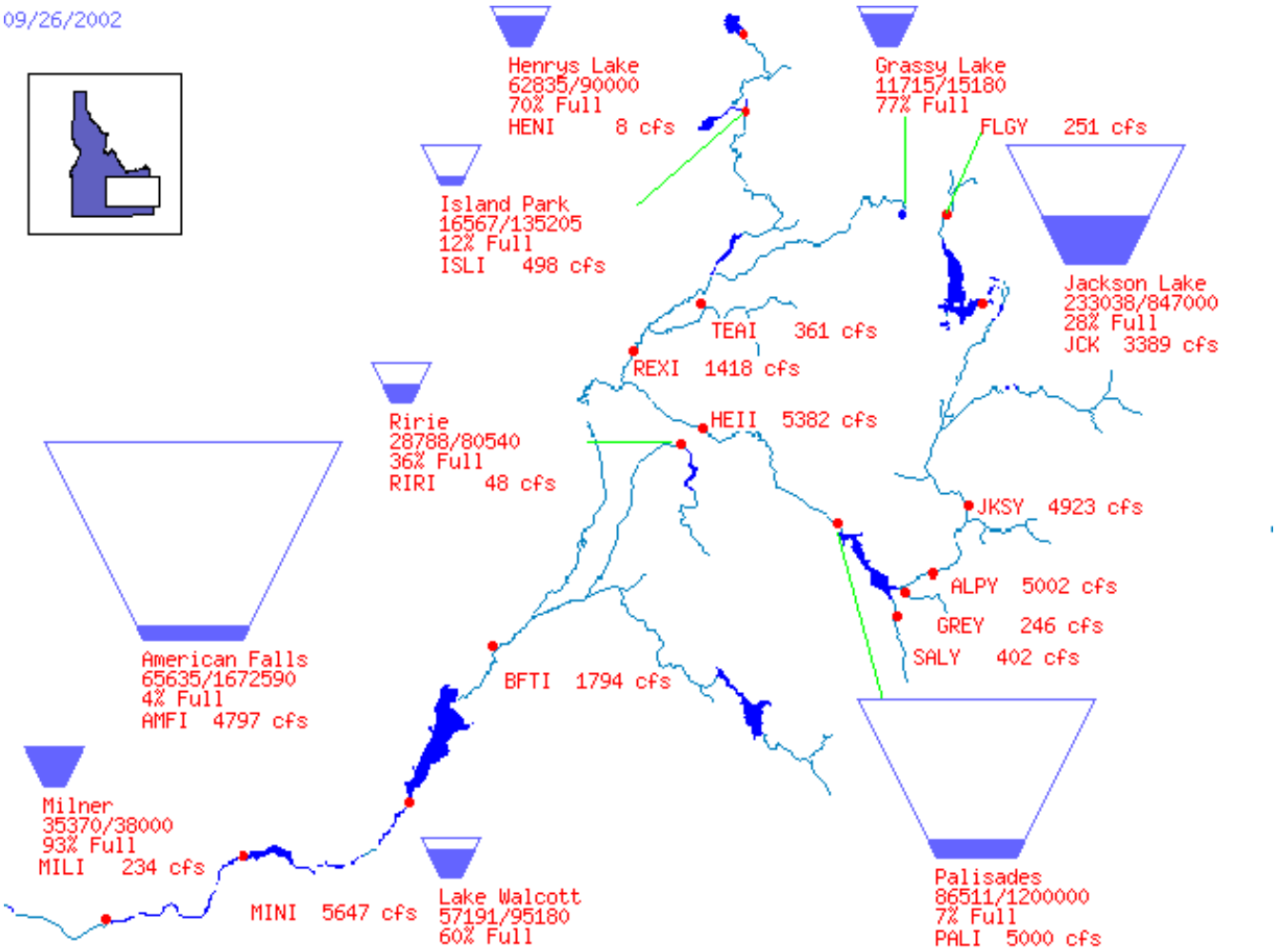


Figure 5 Tea cup diagram showing status of major storage reservoirs in the Upper Snake River Basin of Southeast Idaho as of September 26, 2002 (Provisional data). Source US Bureau of Reclamation, Pacific Northwest Region.

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